communication system having a plurality of base stations asynchronously communicating to a plurality of mobile stations. The communications from a base station to a mobile station being formatted in a plurality of coded channels including a broadcast channel message and a traffic channel message propagating along at least one transmission path, with a corresponding path delay. The broadcast channel message includes predetermined time multiplexed reference and special timing symbols, and the traffic channel includes time multiplexed data symbols.

Step **202** despreads at least one broadcast channel special timing symbol from each base station. Step **204** establishes the broadcast channel multiplex timing for a transmission path, in response to each broadcast channel special timing symbol despread in Step **202**. Step **206** despreads the broadcast channel reference symbols for each transmission path identified in Step **204**. Step **208**, in response to the broadcast channel reference symbols despread in Step **206**, identifies at least two base stations from which transmissions are being received.

Step **210** demodulates the broadcast channel reference symbols for each transmission path identified in Step **204**. Step **212**, in response to the broadcast channel reference symbols demodulated in Step **210**, refines the broadcast channel multiplex timing established in Step **204**. Step **214** compares the broadcast channel timing, refined in Step **210** from at least two base stations. Step **216**, in response to the comparison made in Step **214**, transmits a request to one of the at least two base stations to adjust its transmission of the traffic channel. Step **218** is a product, a received communication where the delay between the transmissions of traffic channels by different base stations is minimized.

Following Step **206**, are further steps (not shown). Step **216***a* completely despreads the traffic channel messages for each transmission path identified in Step **204**. Step **216***b* demodulates the traffic channel data symbols. Step **216***c*, for each base station identified in Step **208**, combines the traffic channel data symbols demodulated in Step **216***b*. Step **216***d* sums the traffic channel data symbols combined in Step **216***c* for all the base stations identified in Step **208**, whereby the signal to noise ratio of the received message is enhanced from the diversity of combining each transmission path, as well as each base station.

A receiver system and method is provided to use timing information gleaned from demodulating the perch channel, directly in the despreading and demodulation of the traffic channel. Although a traffic channel has been specifically cited, the principle of deriving all timing relationships from the perch channel is applicable to the demodulation of other channels. The perch channel generally has a higher power level and greater density of reference symbols, and it saves hardware and processor time to base all channel timing relationships on just one reference channel. Further, the perch channel is used to adjust the timing of base station traffic channel transmissions so that the same information is received from different base stations at approximately the same time. Other embodiments of the present invention will occur to those skilled in the art.

What is claimed is:

1. In a code division multiple access (CDMA) communication system including a plurality of base stations asynchronously transmitting information to a plurality of mobile stations, the communications from a base station to a mobile station being formatted in a plurality of channels propagated along at least one transmission path, with a corresponding path delay, wherein each base station transmits at least one broadcast channel message, each broadcast channel message including a plurality of time multiplexed data symbols and predetermined time multiplexed reference symbols known to each mobile station, wherein each base station transmits at least one traffic channel message, unique to each mobile station, each traffic channel message including a plurality of time multiplexed data symbols and time multiplexed reference symbols, and wherein the data symbols and the reference symbols of both the broadcast and traffic channels are modulated before transmission, a method for each mobile station to receive base station communications comprising the steps of:

for each base station from which a communication is received, identifying at least one transmission oath between the base station and the mobile station;

despreading at least one received communication for each said transmission path identified between the base station and the mobile station, including despreading the broadcast channel data and reference symbols, and despreading the traffic channel data and reference symbols; and

calculating channel timing information for each transmission path identified between the base station and the mobile station, including the following steps:

in response to the broadcast channel reference symbols despread in said step of despreading at least one received communication for each said transmission path, demodulating the broadcast channel reference symbols to provide transmission path weights and phase shift information;

in response to the weights and phase shifts provided during the demodulation of the broadcast channel reference symbols, estimating weights and phase shifts to apply to data symbols; and

in response to estimations made in the preceding step, demodulating the traffic channel data symbols.

2. A method as in claim **1** wherein each traffic channel message includes predetermined time multiplexed reference symbols known to each mobile station, which are modulated before transmission, in which said step of despreading at least one received communication for each said transmission path includes despreading the traffic channel reference symbols, and including the further steps, following said step of demodulating the broadcast channel reference symbols, of:

in response to the traffic channel reference symbols despread in said step of despreading at least one received communication for each said transmission path, demodulating the traffic channel reference symbols to provide transmission path weights and phase shift information;

in response to the weights and phase shifts provided from the demodulation of the traffic channel reference symbols, estimating weights and phase shifts to apply to traffic channel data symbols; and

in which said step of demodulating the traffic channel data symbols includes demodulating the traffic channel data symbols in response to the weights and phase shifts estimated in the preceding step.

3. A method as in claim **1** including the further step, following the step of estimating weights and phase shifts to apply to data symbols in response to the weights and phase shifts provided during the demodulation of the broadcast channel reference symbols of:

in response to estimations made in the step of estimating weights and phase shifts to apply to data symbols in response to the weights and phase shifts provided